

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

In re application of:

Calvez et al.

)

Group Art Unit: Unknown

)

Serial No. 10/550,846

)

Examiner: N/A

)

Filed: March 24, 2004 (I.A.)

)

For: IMPROVEMENTS IN AND
RELATING TO VERTICAL-
CAVITY SEMICONDUCTOR
OPTICAL DEVICES

)

)

)

)

I hereby certify that this correspondence is being
deposited with the United States Postal Service
with sufficient postage as first class mail in
an envelope addressed to: Commissioner for Patents,
PO Box 1450, Alexandria, VA 22313-1450, on or before

Date

April 13, 2007

Janet McGee

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

Applicant wishes to call to the attention of the Examiner the documents cited on the accompanying Form PTO-1449. No concession is made that these documents are prior art, and applicant expressly reserves the right to antedate the documents as may be appropriate. Applicant requests that each of these documents be made of record in the above-identified application.

Respectfully submitted,

Frank J. Uxa

Frank J. Uxa
Attorney for Applicant
Reg. No. 25,612
4 Venture, Suite 300
Irvine, CA 92618
(949) 450-1750
Facsimile (949) 450-1764

Form PTO-1449			Docket No.: D-3213		Application No.: 10/550,846		
INFORMATION DISCLOSURE CITATION IN AN APPLICATION <small>(Use several sheets if necessary)</small>			Applicant: Calvez et al.				
			Filing Date: March 24, 2004		Group Art Unit: Unknown		
U. S. PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	5,052,016	09/1991	Mahbobzadeh et al.				
	5,461,637	10/1995	Mooradian et al.				
	5,513,203	04/1996	Damen				
	5,627,853	05/1997	Mooradian et al.				
	6,025,213	02/2000	Nemoto et al.				
	6,628,695	09/2003	Aldaz et al.				
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	WO 95/25366	09/1995	International				
	WO 99/12235	03/1999	International				
	WO 00/10234	02/2000	International				
	WO 00/12235	03/2000	International				
	WO 00/25398	04/2000	International				
	WO 00/25399	04/2000	International				
	WO 01/59895	08/2001	International				
	WO 01/67562	09/2001	International				
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AA	W.J. Alford et al., "High Power and good beam quality at 980 nm from a vertical external-cavity surface-emitting laser", <i>Journal of the Optical Society of America B (Optical Physics) Opt. Soc. America USA</i> , Vol. 19, No. 4, pages 663-666 (April 2002).					
	AB	C. Asplund et al, "1260 nm InGaAs vertical-cavity lasers", <i>Electronics Letters</i> , Vol. 38, No. 13, 2002, p.635-636					
	AC	D.I. Babic et al., "Double-fused 1.52- μ m vertical-cavity lasers", <i>Appl. Phys. Lett.</i> (9), 27, 1995, P.1030-1032.					
	AD	W.W. Bewley et al, "Thermal Characterization of Diamond-Pressure-Bond Heat Sinking for Optically Pumped Mid-Infrared Lasers", <i>IEEE Journal of Quantum Electronics</i> , Vol. 35, No. 11, 1999, p. 1597-1601.					
	AE	E. Staffan Björlin, "High Gain, High Efficiency Vertical-Cavity Semiconductor Optical Amplifiers", <i>IPRM</i> , 2002, p. 307-310.					
	AF	A. Black, "Wafer Fusion: Materials Issues and Device Results", <i>IEEE Journal Sel. Topics in Quantum Electronics</i> , Vol. 3, No. 3, 1997, p. 943-951.					
EXAMINER			DATE CONSIDERED				
<small>EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.</small>							

Form PTO-1449		Docket No.: D-3213		Application No.: 10/550,846			
INFORMATION DISCLOSURE CITATION IN AN APPLICATION <small>(Use several sheets if necessary)</small>		Applicant: Calvez et al.					
		Filing Date: March 24, 2004		Group Art Unit: Unknown			
U. S. PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	2002/0075929	06/2002	Cunningham				
	2004/0028106	02/2004	Schmid				
	2004/0042523	03/2004	Albrecht et al.				
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	WO 02/47223	06/2002	International				
	WO 03/030316	04/2003	International				
	EP 0 514 283	11/1992	Europe				
	EP 0 748 007	12/1996	Europe				
	GB 2 347 558	09/2000	Great Britain				
	JP 2 030 192	01/1990	Japan				
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AG	M.J. Bohn, "Resonant optical pumping of vertical-cavity surface emitting lasers", <i>Optics Communications</i> , 117(1995) p. 111-115.					
	AH	H. Bourdouden, "Design of Ultra-Fast Dual-Wavelength Resonant-Cavity-Enhanced Schottky Photodetectors", <i>IEEE Journal of Quantum Electronics</i> , Vol. 37, No. 1, 2001, p. 63-68.					
	AI	S. Calvez, "Optimization of an Optically Pumped 1.3- μ m GaInNAs Vertical-Cavity Surface-Emitting Laser", <i>IEEE Photonics Tech. Lett.</i> , Vol. 14, No. 2, 2002, p. 131-133.					
	AJ	S.W. Corzine, "Design of Fabry-Perot Surface-Emitting Lasers with a Periodic Gain Structure", <i>IEEE Journal of Quantum Electronics</i> , Vol. 25, No. 6, 1989, p. 1513-1524.					
	AK	R.P. Espindola, "High power, low RIN, spectrally-broadened 14xx DFB pump for application in co-pumped Raman amplification", <i>ECOC</i> , 2001.					
	AL	R.P. Espindola et al., "Penalty-free 10 Gbit/s single-channel co-pumped distributed Raman amplification using low RIN 14xx nm DFB pump", <i>Electron. Letts.</i> , 38, 3, 2002, p. 113.					
	AM	C.L. Felix et al., "High-efficiency midinfrared "W" laser with optical pumping injection cavity", <i>Appl Phys Lett</i> , Vol. 75, No. 19, 1999, p. 2876-2878.					
	AN	M.F. Ferreira et al., "Impact of Stimulated Brillouin Scattering on Fibre Raman Amplifiers", <i>Electronics Letters</i> , Vol. 27, No. 17, 1991, p. 1576-1577.					
	AO	C.R.S. Fludger et al., "Pump to signal RIN transfer in Raman fibre amplifiers", <i>Electronics Letters</i> , Vol. 37, No. 1, 2001, p. 15-17.					
EXAMINER			DATE CONSIDERED				
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.							

Form PTO-1449		Docket No.: D-3213		Application No.: 10/550,846		
INFORMATION DISCLOSURE CITATION IN AN APPLICATION <small>(Use several sheets if necessary)</small>		Applicant: Calvez et al.				
		Filing Date: March 24, 2004		Group Art Unit: Unknown		
U. S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
FOREIGN PATENT DOCUMENTS						
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
						YES NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)						
	AP	A. Garnache et al., "Sub-500-fs soliton-like pulse in a passively mode-locked broadband surface-emitting laser with 100 mW average power," <i>Applied Physics Letters</i> , Vol. 80, No. 21, 2002, p 3892-3894.				
	AQ	M.D. Gerhold, "Novel Design of a Hybrid-Cavity Surface-Emitting Laser", <i>IEEE Journal of Quantum Electronics</i> , Vol. 34, No. 3, 1998, p. 506-510.				
	AR	M.A. Hadley et al., "High single-transverse-mode output from external-cavity surface-emitting laser diodes", <i>Appl. Phys. Lett.</i> , 63, 1607-1609 (1993).				
	AS	S. Hamidi et al., "Effect of Pump Laser Mode Structure on the Gain of Forward Pumped Raman Fibre Amplifier in the Presence of Stimulated Brillouin Scattering", <i>Electronic Letters</i> , Vol. 28, No. 18, 1992, p. 1768-1770.				
	AT	R. Haring et al., "Picosecond surface-emitting semiconductor laser with >200 mW average power", <i>Electronics Letters</i> , Vol. 37, No. 12, 2001, p. 766-767.				
	AU	J. Harris, "Tunable Long-Wavelength Vertical-Cavity Lasers: The Engine of Next Generation Optical Networks?" <i>IEEE Journal Sel. Topics Quant. Electron.</i> , Vol. 6, No. 6, 2000, p. 1150.				
	AV	J.E. Hastie et al., "A 0.5W, 850nm Al _x Ga _{1-x} As VECSEL with intra-cavity silicon carbide heatspreader", LEOS 2002, 15 th Annual Meeting of the IEEE Lasers & Electro-Optics Society, Glasgow, Scotland, Nov. 11-12, 2002, Annual Meeting of the IEEE Lasers and Electro-Optics Society, New York, NY: IEEE, US, Vol. 1 of 2, 11 November 2002, pages 329-330, XP010620545, ISBN: 0-7803-7500-9.				
	AW	M.A. Holm et al, "Actively Stabilized Single-Frequency Vertical-External-Cavity AlGaAs Laser", <i>IEEE Photonics Tech. Lett.</i> 11, 12, 1999, p. 1551.				
	AX	S. Hoogland et al., "Passively mode-locked diode-pumped Surface-emitting semiconductor laser", <i>IEEE Photonics Tech. Letters</i> , Vol. 12, No. 9, 2000, p. 1135-1137.				
	AY	H.Q. Hou et al., "MOVPE Growth of High Performance 1.06 μm Selectively Oxidized Vertical-Cavity Surface Emitting Laser", <i>OSA Tops</i> , Vol. 15, 1997, p. 106-111.				
	AZ	X. Jin et al., "Microwave Modulation of a Quantum-Well Laser with and without External Optical Injection", <i>IEEE Photon Tech. Letters</i> , Vol. 12, No. 7, 2001, p. 648-650.				
	BA	U. Keller, "Semiconductor Saturable Absorber Mirrors (SESAM's) for Femtosecond to Nanosecond Pulse Generation in Solid-State Lasers", <i>IEEE Journal of Sel. Topics in Quant. Electron.</i> , Vol. 2, No. 3, 1996, p. 435-453.				
EXAMINER			DATE CONSIDERED			
<small>EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.</small>						

Form PTO-1449		Docket No.: D-3213		Application No.: 10/550,846		
INFORMATION DISCLOSURE CITATION IN AN APPLICATION <small>(Use several sheets if necessary)</small>		Applicant: Calvez et al.				
		Filing Date: March 24, 2004		Group Art Unit: Unknown		
U. S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)						
	BB	T. Kim et al., IEEE? LEOS '97 Topical Meeting, 1997, p. 55.				
	BC	M. Kuznetsov et al, "Design and Characteristics of High-Power (>0.5-W CW) Diode-Pumped Vertical-External-Cavity Surface-Emitting Semiconductor Lasers with Circular TEM ₀₀ Beams", <i>IEEE J of Sel. Topics Quant. Electron</i> , 5, 3, 1999, p. 561.				
	BD	M. Kuznetsov et al., "High-power (>0.5 W CW) Diode-pumped Vertical-External-Cavity Surface-Emitting Lasers with Circular TEM ₀₀ Beams", <i>IEEE Photonics Tech. Lett.</i> , 9, 1063-1065 (1997).				
	BE	C.P. Lee et al., "Dual-wavelength Bragg reflectors using GaAs/AlAs multilayers", <i>Electronics Letters</i> , Vol. 29, No. 22, 1993, p. 1980-1981.				
	BF	Z.L. Liao et al., "Nanometer air gaps in semiconductor wafer bonding", <i>Applied Physics Letters</i> , Vol. 78, No. 23, 2001, p. 3726-3728.				
	BG	Z.L. Liao et al., "Semiconductor wafer bonding via liquid capillarity", <i>Applied Physics Letters</i> , Vol. 77, No. 5, 2000, p. 651-653.				
	BH	Y.H. Lo et al., "Semiconductor lasers on Si substrates using the technology of bonding by atomic rearrangement", <i>Appl. Phys. Lett.</i> , Vol. 62(10), 1993, p. 1038-1040.				
	BI	D.J. Lovering et al., "Optimisation of dual-wavelength Bragg mirrors." <i>Electronics Letters</i> , Vol. 32, No. 19, 1996, p. 1782-1784.				
	BJ	M.D. Mermelstein et al., "RIN transfer analysis in pump depletion regime for Raman fibre amplifiers", <i>Electronics Letters</i> , Vol. 38, No. 9, 2002, p. 403-405.				
	BK	P. Michler et al., "Emission Dynamics of In _{0.2} Ga _{0.8} As/GaAs λ and 2 λ Microcavity Lasers", <i>Applied Physics Letters, American Institute of Physics</i> , New York, US, Vol. 68, No. 2, 1996, pages 156-158.				
	BL	S.S. Murtaza et al., "High-Efficiency, Dual-Wavelength, Wafer-Fused Resonant-Cavity Photodetector Operating at Long Wavelengths", <i>IEEE Photon. Tech. Lett.</i> , Vol. 7, No. 6, 1995, p. 679-681.				
	BM	Y. Onishi et al., "Design and Fabrication Process of Optically Pumped GaInAsP/InP Stripe Laser with Resonant Pumping for High-Power Operation", <i>Japanese Journal of App. Phys.</i> , Vol. 40, 2001, p. 4920-4921.				
	BN	M.Y.A. Raja et al., "Resonant Periodic Gain Surface-emitting Semiconductor Lasers", <i>IEEE J. Quantum Electron.</i> , Vol. 25, No. 6, 1989, pp. 1500-1512.				
EXAMINER			DATE CONSIDERED			
<small>EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.</small>						

Form PTO-1449 INFORMATION DISCLOSURE CITATION IN AN APPLICATION <small>(Use several sheets if necessary)</small>		Docket No.: D-3213		Application No.: 10/550,846		
		Applicant: Calvez et al.				
		Filing Date: March 24, 2004		Group Art Unit: Unknown		
U. S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
FOREIGN PATENT DOCUMENTS						
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
						YES NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)						
	BO	E. Schiehlen et al., "Diode-Pumped Semiconductor Disk Laser With Intracavity Frequency Doubling Using Lithium Triborate (LBO)", <i>IEEE Photonics Tech. Lett.</i> 14, 6, 2002 , p. 777.				
	BP	M. Schulze et al, "Efficiency Experts", <i>Photonics Spectra</i> , May 2001.				
	BQ	M. Schulze, "Technologischer Durchbruch mit blauen Festkörperlasern", <i>Photonik</i> 3, 2001.				
	BR	C. Stewen et al., "A 1-k W CW Thin Disc Laser", <i>IEEE J. of Sel. Topics Quant. Electron.</i> , Vol. 6, No. 4, 2000 , p. 650-657.				
	BS	A. Valentini et al., "Organic-inorganic dual-wavelength Bragg reflector", <i>Electronics Letters</i> , Vol. 35, No. 11, 1999 , p. 896-897.				
	BT	E. Yablonovitch et al., "Van der Waals bonding of GaAs epitaxial liftoff films onto arbitrary substrates", <i>Appl. Phys. Lett.</i> , Vol. 56, No. 24, 1990 , p. 2419-2421.				
	BU	F. Yang et al., "Edge-emitting quantum well laser with Bragg reflectors", <i>Appl. Phys. Lett.</i> , Vol. 66, No. 22, 1995 , p. 2949-2951.				
	BV	Coherent Laser Division. Sapphire Optically Pumped Semiconductor Lasers, Copyright 2002, Coherent, Inc.				
	BW	Coherent® Product Information. Sapphire 488 & 460 LP, Copyright 2006, Coherent, Inc.				
EXAMINER			DATE CONSIDERED			
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.						